USDA Forest Service Watershed Condition Framework
FY2011 TRANSITION WATERSHED RESTORATION ACTION PLAN
Sequoia National Forest
Western Divide Ranger District
South Creek Watershed

1. Summary

a. Watershed Name and HUC: South Creek 180300010504

b. General Location: South Creek is located near Johnsondale, CA. South Creeks, flows east and confluences with the North Fork Kern River above Kernville and Lake Isabella. Lake Isabella flows into Lower Kern River through the city of Bakersfield and terminates into the Tulare Lake Basin

c. Total Watershed Area: 14,676 acres**; NFS area within watershed: 95**%.

d. Watershed Characterization:

- **General Physiography:** Elevation ranges from about 3,400 to 7,500 feet in the drainage, which is predominately granitic and meta-volcanic rock. Vegetation ranges from chaparral and oak woodlands covering the lower portions of the watershed to pine, mixed conifer (including giant sequoia), and true fir at the upper elevations. Riparian vegetation consists of stringers of willow and alder usually along creeks or meadow edges. Flows from the watershed are variable. Although extreme flows occur rarely, variations in flows can and do change rapidly in this watershed.

- **Land Use:** Historical land uses of the watershed included sheep and cattle grazing in the late 1800s, gradually shifting to just cattle grazing by the time of Forest Service acquisition. These early uses have negatively influenced some meadow and stream environments. From 1934 to 1979, the community of Johnsondale contained a small sawmill industry. Many of the larger diameter trees in the conifer stands in the South Creek basin were harvested. One hundred percent of this watershed now lies within the Giant Sequoia National Monument. Recreation and livestock grazing are currently the primary land uses in this watershed

- **General Overview of Concerns:**
  The primary concerns in this watershed center on sediment and non-point-source pollution contributions from roads and dispersed recreation sites to streams. Approximately 37% of the existing roads, dispersed camp sites, and trails are within 300 feet of water. General road maintenance activities, road drainage reconstruction (culvert replacement, over-side drainage repair, etc.), and road decommissioning work has been identified and is needed within this watershed. Road related aquatic organism passage problems also exist which are resulting in increased habitat fragmentation and decreases in hydrologic connectivity. These factors are negatively influencing several meadows and streams at road interfaces. Historic logging in conjunction with the McNally Fire of 2002 has reduced large tree attributes in forest stands around Johnsondale. Areas burned in the McNally Fire perimeter should be reforested to set a timelier path to desired future condition. The watershed contains valuable cultural resource (both historic and pre-historic), and contains portions of two giant sequoia groves. Fire is a threat to all of these resources plus the watershed.

- **Important Ecological Values:** Giant Sequoia National Monument, Packsaddle, Long Meadow, and Powerhorn Giant Sequoia Groves, South Creek flows directly into North Fork Kern Wild & Scenic River, Kern River rainbow trout habitat, and historic mountain yellow legged frog habitat

- **Current Condition Class: 1.8 Target Condition Class: 1.5**

e. Key Watershed Issues

1) Attributes/Indicators within FS control to affect

ATTRIBUTES	REASON FOR FAIR OR POOR RATING
(1.2) Water Quality 2.0- Fair, Functioning at Risk	Water Quality is affected by dispersed recreation in the vicinity of Thompson Camp, Parker Meadow Creek, Bear Creek, and Double Bunk Meadow. There are 27 of these sites identified within the watershed. These sites have sanitation in addition to contribution of sediment into channels. Johnsondale, private land, is the site of an old lumber mill and mill pond. This area has since been converted to recreation. The mill pond is now used as a recreational lake that is unable to sustain a natural fish population. Stables and a trailer site located immediately adjacent to South Creek, are affecting water quality. South Creek confluences with the North Fork Kern River which flows into Lake Isabella, a 303(d) waterbody.
(3.1) Aquatic Habitat Fragmentation 2.0- Fair, Functioning at Risk	Road related aquatic organism passage problems exist which increase habitat fragmentation and decrease hydrologic connectivity. Meadows with conditions that affect aquatic organism passage include Horse Meadow, Holey Meadow, Bear Meadow, and Powerhorn Meadow. Inventory of other meadow sites could increase identified organism passage sites. Roads with identified aquatic organism passage problems include: 22S04, 23S15, 23S16A, 23S64, 22S81.
(3.2) Large Woody Debris 2.0- Fair, Functioning at Risk	Woody debris varies based on two SCI plots located on Parker Meadow and Mill Creeks. Woody debris at the Mill Creek site is considered to be below its natural range of variability while Parker Meadow Creek is within its natural range of variability.
(3.3) Channel Shape and Function 2.0 – Fair, Functioning at Risk	Channel function and shape is based on erosion, deposition, and vegetative changes resulting in changes in width-to-depth ratios, aggradation and degradation, and disconnection of channels with respect to floodplains. Specific locations include: Parker Meadow Creek, Bear Creek, Powder Horn, Horse, and Bear Meadows. Some of the dispersed recreation sites are responsible for vehicular traffic onto meadows, others visibly encroach into meadow.
(4.1) Life Form and Presence 2.0 – Fair, Functioning at Risk	Based on Hilsenhoff Biotic Index for Invertebrate samples taken at Parker Meadow Creek, the overall biotic index score was low. Historic location for MYLF in French Joe, and Double Bunk Meadows.
(4.3) Aquatic Invasive Species 2.0 –Fair, Functioning at Risk	Kern River rainbow trout hybrids are present in the watershed. Past fish stocking has taken place in the area and accounts of the presence of hybrids.
(6.1) Road Density 3.0, Poor Impaired	Road and trail density in the watershed is 2.7 mi/mi^2. This density does not include closed or temporary roads.

(6.2) Road Maintenance 2.0, Fair Functioning at Risk	There are numerous buried, partially or fully plugged culverts and over side drains, rolling dips eroding or not functional, and roads with drainage problems, including ponding and gullying on the road surface. Road condition is responsible for non-point-source pollution and habitat conditions in the watershed.
(6.3) Road Proximity to Water 3.0, Poor Impaired	Of the 66.5 miles of roads and trails in the watershed 24.4 miles or 36.7% are located within 300 feet of a stream. South Creek, Double Bunk, Parker Meadow Creek, Bear Creek and Mill Creek have roads that parallel streamcourses for much of their flow. Additionally, a number of roads are hydrologically connected to the road system. The road adjacent to Mill Creek was reconstructed in 2008 under a Legacy Roads and Trails project.
(7.1) Soil Productivity 2.0- Fair, Functioning at Risk	Soil nutrient and hydrologic cycling processes are impaired and the ability of the soil to maintain resource values and sustain outputs is compromised in 7 % of the watershed. This places the watershed just slightly into a rating of fair
(8.1) Fire Condition Class 2.0- Fair, Functioning at Risk	The McNally Fire of 2002 burnt portions of the watershed converting most of the burned area from mixed conifer forest to brush. Other areas unaffected by fire have high fuel loads and a fire return interval of High, having missed multiple fire intervals.
(9.1) Forest Cover 2.0- Fair, Functioning at Risk	Approximately 25 % of the watershed was burnt during the McNally fire significantly reducing forest cover for wildlife and aquatic species.

2) Attributes/Indicators that require other parties to address

ATTRIBUTES /INDICATOR	REASON FOR RATING
(2.1) Water Quantity-Flow Characteristics 2.0- Fair, Functioning at Risk	A diversion from Parker Meadow Creek fills the mill pond at Johnsondale. Johnsondale is a private parcel of land within the watershed. The pond is small, approximately 10 acres, and reducing diverted discharge to South Creek. While this site was initially identified it poses a minor interruption to water quantity. There are eight water rights/uses within the watershed.
(7.3) Soil Contamination 2.0- Poor Impaired	Based on RO analysis soil contamination is impaired as a function of air quality. The San Joaquin Valley lies within one of the worst airsheds in the nation. The air district does not currently meet federal ozone guidelines. This watershed lies within the San Joaquin Valley Air District and is affected by the Ozone and pollution that rises from the valley floor
(12.2) Forest Health - Ozone 3.0-Poor, Impaired	The San Joaquin Valley lies within one of the worst airsheds in the nation. The air district does not currently meet federal ozone guidelines. This watershed lies within the San Joaquin Valley Air District and is affected by the Ozone and pollution that rises from the valley floor.

2. Watershed Characteristics and Conditions

a. General Context/Overview of the Watershed

The South Creek Watershed is located in the Sierra Nevada Mountains approximately 25 air miles east and south of Porterville, Ca and 15 air miles North of Kernville, Ca. The watershed encompasses 23 square miles and is comprised of predominately granitic and meta-volcanic rock. Headwaters contain roughly 20 mountain meadows that at one time supported populations of mountain yellow legged frog. The watershed drains 49 miles of stream that support the Wild and Scenic North Fork Kern River. At South Creek's confluence with the North Fork Kern River the fishery is managed for Kern River rainbow hybrids. The South Creek Watershed receives a diversity of recreational uses such as hiking, fishing, mountain biking, hunting and camping. High recreation use has led to the establishment of numerous dispersed camping sites. The most recent wildfire was the McNally fire of 2002 which affected the lower third of the watershed. Standing and down trees killed by the fire provide high concentrations of fuel and have increased fire susceptibility.

b. Watershed Conditions

The watershed is considered functioning at risk. High road density, proximity to waterways, and lack of road maintenance poses a concern for sediment deposition and non-point-source pollution into perennial streamcourses. Dispersed recreation adjacent to riparian areas are an additional source of excess sediment in addition to sanitation problems to streams. Meadow areas are variable in their conditions. Many meadows were overgrazed at the turn of the century and have downcut roughly 5-10 feet. Attempts to restore these sites have occurred over the years. The forest has photographs of these sites that date back to 1936 documenting conditions. Fuel loads in the watershed are moderate to high including areas around the community of Johnsondale. Johnsondale is a private community that was once a mill site. The mill pond has been converted to a lake that cannot sustain a natural fishery. Water quality is a concern at and below private lands.

3. Restoration Goals, Objectives, and Opportunities

a. Goal Identification and Desired Condition

b. Objectives

i. Alignment with National, Regional, or Forest Priorities

1) **<u>National Priorities</u>**-Restoration of South Creek Watershed is aligned with the USDA Forest Service Strategic Plan FY 2007-2012. Implementation of the South Creek Watershed Action Plan would reduce the threats from: (1) the risk of loss from catastrophic wildland fire caused by hazardous fuel buildup; (2) the introduction and spread of invasive species; (3) the loss of open space and resulting fragmentation of forests and grasslands that impairs ecosystem function; and (4) unmanaged recreation. It is the intent of the plan to collaborate with other agencies, States, tribes, local communities, and other pertinent partners. The following goals would be meet through proposed actions:

Goal 1. Restore, Sustain, and Enhance the Nation's Forests and Grasslands (USDA Objectives 6.1, 6.3, 6.4)

Objective 1.1 -Reduce the risk to communities and natural resources from wildfire.

a. Performance Measure: Number and percentage of acres treated to restore fire-adapted ecosystems that are (1) moved toward desired conditions and (2) maintained in desired conditions.

Objective 1.5 -Restore and maintain healthy watersheds and diverse habitats.

a. Performance Measure: Percentage of watershed in class 1 condition.
b. Performance Measure: Acres and miles of terrestrial and aquatic habitat restored consistent with forest plan direction.

Means and Strategies for Accomplishing Goal 1

- Develop and apply detection, prediction, prevention, mitigation, treatment, and restoration methods, technologies, and strategies for addressing disturbances.
- Maintain resilient land and water conditions at the watershed level and restore deteriorated lands and waters.
- Develop and implement conservation strategies to conserve endangered, threatened, and other at-risk species.
- Monitor the status of congressionally designated areas and manage them to protect and enhance the values for which they were designated.

Goal 4. Sustain and Enhance Outdoor Recreation Opportunities (USDA Objective 6.3)

Objective 4.1 -Improve the quality and availability of outdoor recreation experiences.

a. Performance Measure: Percentage of recreation sites maintained to standard.
e. Performance Measure: Percentage of road system intended for passenger-car use that is suitable for passenger-car use.

Means and Strategies for Accomplishing Goal 4

- Provide tools, guidance, and resource management to provide safe recreation use and to prevent or mitigate the ecological impacts of recreation activities.
- Provide recreational opportunities consistent with an area's physical, biological, and social characteristics and capabilities.
- Use private, nongovernmental, and interagency partnerships to accomplish collaborative community recreation/tourism plans.

1) **Regional Priorities** - Restoration of South Creek Watershed is directly aligned with the Regions Ecological Restoration Strategy. The goal of retaining and resorting ecological resilience to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms is the focus of this action plan. Restoration of meadows, reduction in non-point-source pollution, elimination of human waste sources, and reduction of fuels provide for a more sustainable ecosystem through accelerated recovery. Additionally restoration of the watershed would help to reduce carbon inventories in addition to improving water quality and aquatic habitat.

2) **Forest Priorities** - Restoration of South Creek Watershed is aligned with Forest Priorities.
   - South Creek Watershed is located in the **Giant Sequoia National Monument**. Presidential Proclamation provides direction for **Protection of Objects of Interest**. This includes restoring natural function (i.e., hydrologic connectivity in a stream system) and protecting the overall resource from future harm. It includes **Ecological Restoration and Protection** of ecosystems from stressors to the system while restoring the ecosystems and ecological processes from past harm (both human-caused and natural). It is important to maintain resiliency in the ecosystem to be responsive stressors. **Public access and recreation** in the Monument must be consistent with the purposes of the monument and provide safe recreation use while preventing and mitigating ecological impacts of recreation activities**. Protection of the Giant Sequoia Groves** while foremost in the proclamation is dependent on a healthy resilient, sustainable ecosystem.

- South Creek Watershed flows into the Wild and Scenic North Fork Kern River, restoration of this watershed meets the **Comprehensive Management Plan for the North and South Forks of the Kern Wild and Scenic River** and the **Upper Kern River Action Plan**.

  Objectives identified under the Comprehensive Management Plan for the North and South Forks of the Kern Wild for water quality and use include:
  - Protect water quality through implementation of appropriate Best Management Practices
  - Enforce applicable section of 36CFR261.11 Sanitation, and BMP 4.3 and 4.5.

  Goals under the action plan aligned with South Creek Watershed Action Plan are as follows:

  > *Goal #5: Manage recreational use to minimize adverse impacts on other resources, such as water quality, cultural resources and/or recovery of threatened, endangered, or sensitive species.*

  While the Comprehensive Management Plan for the North and South Forks of the Kern Wild and Scenic River, 1994 and the Upper Kern River Action Plan, 2010 are designed specifically for the Kern River effects from South Creek Watershed appear to currently affecting and have the potential to affect water quality in the downstream wild and scenic river.

- Restoration of South Creek meets current **Land Management Plan** direction as amended by the **Sierra Nevada Plan Amendment**. Riparian Conservation Strategy provides objectives that are achieved through the South Creek Watershed Action Plan.
  - **Riparian Conservation Objective #1:** Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.
  - **Riparian Conservation Objective #2**: Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.
  - **Riparian Conservation Objective #3:** Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the RCA.
  - **Riparian Conservation Objective #4:** Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.
  - **Riparian Conservation Objective #5:** Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

- **Riparian Conservation Objective #6:** Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

- **South Creek Ecosystem Analysis, 1994** is a landscape analysis developed to integrate multiple resource objectives and values through ecosystem analysis and management. This document formed the foundation for many of the projects proposed and implement under past actions.

ii. Alignment with State or local goals: All projects will be aligned with the State of California and Tulare County goals. Any needs for water quality waivers will be made through the Central California Water Quality Control Board.

c. Opportunities

i. Partnership Involvement

Potential partners in this priority watershed include, but are not limited too, Sierra Nevada Conservancy, R-Ranch, Kern River Trust, California Department of Fish and Game, Tulare County Resource Advisory Council, Tulare County Fire Safe Council, Giant Sequoia National Monument Association, CAL FIRE, Tule River Reservation, volunteers (WildPlaces, site stewards (cultural resources), Boy Scouts of America, etc.), grazing and special uses permittes, and various private property owners. Roles will vary depending on the project and could include contributed labor or dollars towards a specific project.

ii. Outcomes/Output

a). Performance Measure Accomplishment

The expected performance measure accomplishments to be achieved when this watershed restoration action plan is fully implemented would be those identified under the national, regional, and local priorities.

b). Socioeconomic Considerations:

Completion of this restoration plan will help to contribute to the local economy directly by providing contracting work to implement several of the proposed projects. Indirectly, restoration efforts will enhance and continue recreational activities that will contribute to the local economies by providing jobs in the tourism industry.

Project	Performance Measure	Expected Amount of Units per Project
Reduction of dispersed camping sites	Acres of dispersed recreation sites reduced	27 sites total
Develop Kern River Rainbow Management Plan	Completed Plan	1 Plan
Inventory and evaluation of Double Bunk, Upper and Lower Parker Meadow, Solider, and all other meadows in the watershed.	Number of meadows inventoried and evaluated	20 meadows exist in the watershed.

Survey and design restoration strategy for Parker, Powder Horn, Horse, Holey, and Bear Meadows	Number of meadow surveys and design plans	5 meadows or more
Restoration of meadows	Restoration of meadow function; stream is connected with floodplain	Restore 5 or more meadows
Aquatic Organism Passage	AOP sites restored to allow organism passage.	7 sites currently identified
Road decommissioning/conversion	Number of road miles eliminated/ decommissioned/converted	Approximately up to 20% reduction in roads
Road restoration	Number drainage structures restored	61 drainage structures currently identified
Road maintenance	Miles of road maintained	Approximately 47 miles of road currently identified
Improve wildlife and aquatic species habitat using brush removal and prescribed fire	Acres of habitat improved	5,000 acres or more

a) Socioeconomic Considerations: Completion of this restoration plan will help to contribute to the local economy directly by providing contracting work to implement several of the proposed projects. Indirectly, restoration efforts will enhance and continue recreational activities that will contribute to the local economies by providing jobs in the tourism industry. An estimated 20 seasonal jobs during 2012 and 2014 will be created for pre-planning, surveys, and implementation of projects. Much of the road improvement work will be performed under contract given the need for heavy equipment

d. Specific Project Activities (Essential Projects)

a) Essential Project #1

- **Attribute Addressed**: Road Density (6.1), Road Proximity to Water (6.3);
- **Project Description:** Decommission roads or convert selected roads to trails. Closed, temporary, or system roads selected for decommission/conversion would reduce watershed road density up to approximately 20%.
- **Partner Involvement:** Tulare County Resource Conservation District, Kern River Trust

b) Essential Project #2

- **Attribute Addressed**: Road Maintenance (6.2);
- **Project Description:** Maintenance and/or improvements for Forest system roads: System roads receiving maintenance and improvements would clean, repair, and/or replace culverts. Approximately 61 miles of roads need maintenance and/or repairs.
- **Partner Involvement**: County of Tulare

c) Essential Project #3

- **Attribute Addressed**: Aquatic Habitat Fragmentation (3.1), Channel Shape and Function (3.3), and Fire Condition Class (8.1);
- **Project Description:** Implement Meadow Restoration to restore hydrologic function and connectivity as well as channel morphology. Restore meadows along with inventorying additional meadows for potential future restoration needs. Treat headwaters with fire to reduce susceptibility and provide sediment to support meadow restoration.
- **Partner Involvement**: Agua Bonita, Kaweah Flyfishers, WildPlaces, California Department of Fish & Game, Kern River Trust Tulare County Resource Conservation District

d) Essential Project #4

- **Attribute Addressed**: Water Quality (1.2)
- **Project Description:** Improve or remove Dispersed Camping Sites to reduce sanitation issues. Approximately 27 sites within the watershed are known to have dispersed camping and lack proper sanitation facilities
- **Partner Involvement**: WildPlaces, Tulare County Resource Conservation District

e) Essential Project #5

- **Attribute Addressed**: Aquatic Habitat Fragmentation (3.1) and Road Maintenance (6.2);
- **Project Description:** Restoration of Aquatic Organism Passages. There are 7 sites within the South Creek watershed impacting aquatic organism passage (AOP). Culverts and stream crossings are set too high or have downcut the channel on the outlet side prohibiting AOP. Resetting the angle and/or location of the culvert would improve AOP
- **Partner Involvement**: Tulare County Resource Conservation District

f) Essential Project #6

- **Attribute Addressed**: Exotic and /or Invasive Species (4.3), Aquatic Habitat Fragmentation (3.1) and Life Form and Presence 4.1).
- **Project Description:** In conjunction with California Department of Fish & Game develop a maintenance plan for the Kern River Rainbow Trout.
- **Partner Involvement**: California Department of Fish & Game

g) Essential Project #7

- **Attribute Addressed**: Water Quality (1.2)
- **Project Description:** Partner with R Ranch, Johnsondale, to improve water quality in mill pond and reduce negative impacts to South Creek's water quality from the Johnsondale communities.
- **Partner Involvement**: R Ranch and California Department of Fish & Game

h) Essential Project #8

- **Attribute Addressed**: Forest Cover (9.1) and Fire Condition Class (8.1);
- **Project Description:** Improve wildlife and aquatic species habitat on approximately 5,000 acres using brush removal, prescribed fire, and tree planting

- **Partner Involvement**: Kern River Trust, WildPlaces

e. Costs:

	Planning	Survey & Design	Implementation	Monitoring	Totals
FS Contribution	$990,000	$50,000	$4,220,000	$150,000	$5,410,000
Partner Contribution (both in kind and $)	$140,000	$50,000	$370,000	$0	$560,000
Totals	$1,130,000	$100,000	$4,590,000	$150,000	$5,970,000

f. Timelines and Project Scheduling

FY	Task	FS Cost	Partner cost
12	Categorical Exclusion for minor road maintenance repairs	50,000	
12	Archeological Surveys for all projects	75,000	10,000
12	Complete inventory of all projects	150,000	50,000
12	Initiate Kern River Rainbow Trout Management Plan	15,000	55,000
12	Complete meadow restoration designs for 5 meadows	50,000	50,000
12	Complete aquatic organism passage NEPA	75,000	
13	Complete Meadow Restoration NEPA (5 Meadows)	375,000	75,000
13	Implement road maintenance, culvert, over side drain repairs.	150,000	50,000
14-16	Meadow Restoration Implementation (5 Meadows)	500,000	250,000
14	Complete Dispersed Camp Site NEPA	100,000	
14	Fuels and Forest Cover NEPA	150,000	
14	Aquatic organism passage implementation	70,000	10,000
13-16	Project Monitoring (BMP, SCI, Implementation Effectiveness)	150,000	
15	Fuels and Forest Cover Implementation	3,200,000	50,000
16	Implement Dispersed Camp Site Improve/Remove	300,000	10,000

g. Other Partners

Limited opportunities do exist to bring in other partners throughout the design and implementation of this watershed action plan. The Southern Sierra Conservation Cooperative, made up of members from the federal land management agencies in this area (Forest Service, Park Service, BLM) along with several non-government organizations (NGOs) (Sequoia Riverlands Trust, Sierra Business Council, Conservation Biology Institute) and state agencies (Sierra Nevada Conservancy) are interested in research and projects addressing climate change and the stress factors (fire, invasive species, pollutants, human uses) on ecosystems that cross jurisdictional boundaries in this area. This watershed may present opportunities to pursue vegetation work (fuels reduction) and studies in the oak woodlands and mixed conifer vegetation types that would be of interest to this conservation cooperative.

4. Restoration Project Monitoring and Evaluation

a. The forest will monitor: Specific monitoring plans will be develop for each individual project. The forest will continue to monitor the Stream Condition Inventory Plots that have been established in this watershed before, during and after implementation of these projects. Depending on the project, monitoring could continue up to 3+ years after implementation.

b. Monitoring will be done in cooperation with: Monitoring will be done in cooperation with adjacent landowners where warranted along with local state and other federal agencies when needed. Opportunities to engage partners from academia and volunteers will also be pursued. Some monitoring may take up to 3+ years after project implementation.

Action Plan Date: **September 30, 2011**
Reviewing Official and Title: **Kevin Elliott – Forest Supervisor**
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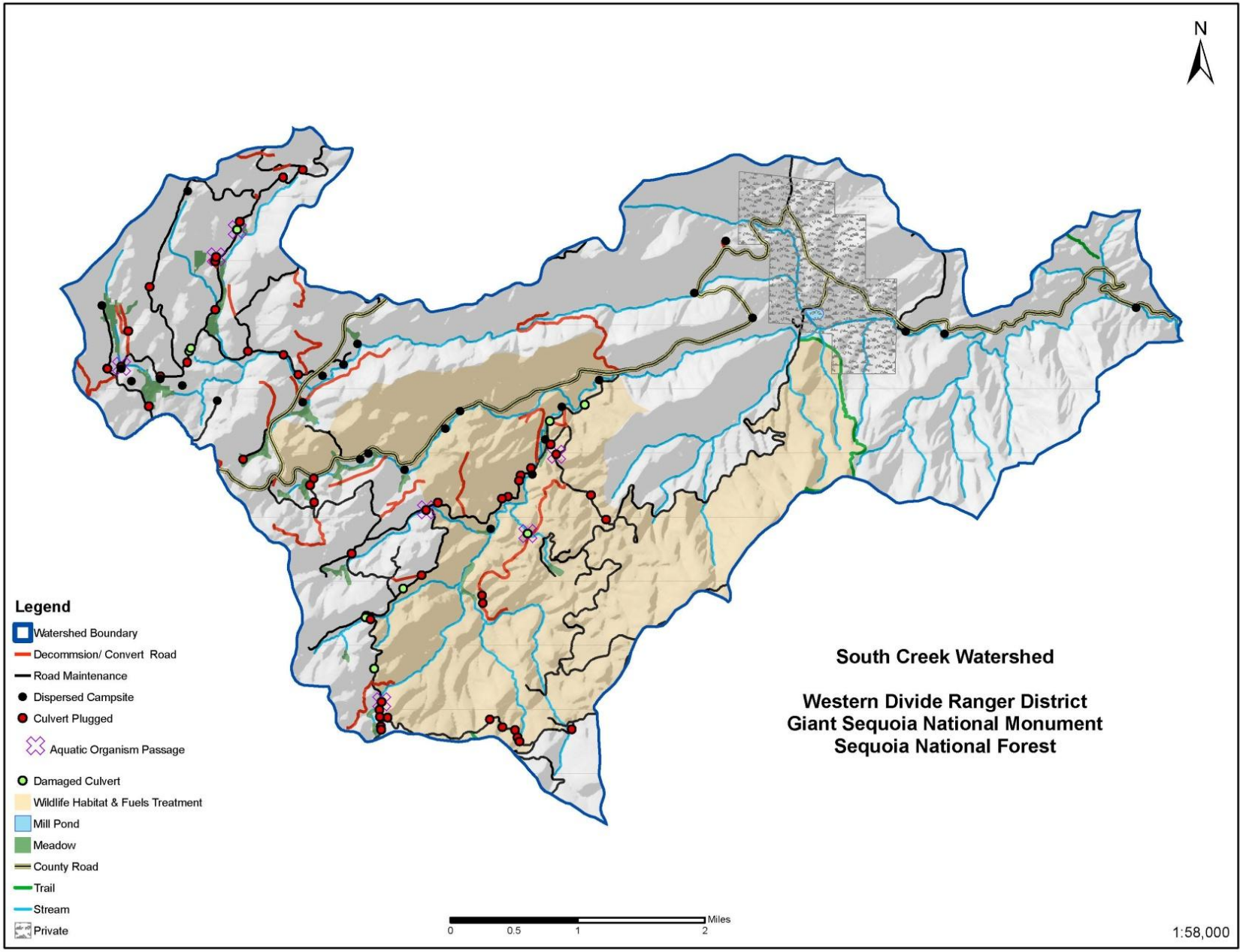
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Legend
Watershed Boundary
Decommsion/ Convert Road
Road Maintenance
Dispersed Campsite
Culvert Plugged
Aquatic Organism Passage
Damaged Culvert
Wildlife Habitat & Fuels Treatment
Mill Pond
Meadow
County Road
Trail
Stream
Private
South Creek Watershed
Western Divide Ranger District
Giant Sequoia National Monument
Sequoia National Forest
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